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Congress

THE Association's 74th Annual Congress, the programme for which is published on another page, bids fair to continue, perhaps even to accelerate, the welcome progress both in attendance and in interest, which has been discernible in recent years. The programme contains several innovations, notable among them being the service in the parish church which is to precede the traditional At Home given by the host Divisions, and the Blessing with which the formal proceedings will begin on the Monday. It is a source of satisfaction that these matters were first put forward in our correspondence columns.

A second innovation, in the professional sphere, will be the demonstrations, by closed circuit television, of certain surgical techniques. At other scientific congresses within recent years the use of television has proved a fascinating adjunct to the reading and discussion of papers, and those who are responsible for the organisation of this year's Congress are to be congratulated upon their initiative in this regard.

The number of papers to be read is fewer than last year, but they comprise an admirable variety, and are to be delivered by workers of note. Very welcome will be the appearance of two members of the sister profession who are to read a joint paper on Animal Diseases from the point of view of Human Medicine. It will be recalled that, in Belfast last year, an absorbing paper was read by two non-veterinary scientists on the effects of atomic radiation; and these incursions into our deliberations of workers outside our own ranks add greatly to the variety, as to the value, of the Annual Congress.

Both large and small animal interests are to be catered for, and the special paper on Common Diseases of Cage Birds and other less usual pets should disseminate some valuable information on a matter of growing importance to members in private practice. This is a subject to which the Technical Development Committee has given thought, and certainly the profession has here a field of endeavour which should not go disregarded.

On the social side this year's Congress has a full and satisfying programme, culminating as by custom in the President's reception and dance, when Mr. Wilkinson and his lady will greet the profession for the last time before laying down the burden of office on the following morning.

No visit within distance of Stratford on Avon would be complete without homage being paid at the Shakespeare Memorial Theatre, and those members who propose to attend the performance on the Thursday evening would be well advised to request the General Secretary to reserve their tickets in good time.

Among the social events we observe that a mannequin parade is announced. Somewhat puzzlingly this recherché spectacle is described, in parenthesis, as being "for the ladies." Whether the gentlemen are to be specifically excluded is not made clear, and no doubt veterinarians of discretion will affect a scientific disdain while indulgently allowing themselves to be persuaded into going by their wives.

The venue for Congress this year is not only in itself a charming town of considerable historic and antiquarian interest, but it has the additional advantage of being centrally situated and available to a very large body of veterinary surgeons. There is every reason to believe that numbers will be high, and those who intend to be present at what is, without doubt, the principal function in the Association's year should book up in good time.

A Note on the Occurrence of Muscular Dystrophy in Hoggs in the North of Scotland

BY

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OUTBREAKS of muscular dystrophy in lambs (white muscle disease, stiff lamb disease) have been reported from many parts of the temperate zones including Great Britain (Cotchin, 1948). In older sheep, the disease appears to be rare. There are, however, records of its occurrence in hoggets or hoggs (one-year-old sheep) in New Zealand (Dodds, 1954). Hartley (1955) in New Zealand has also encountered muscular dystrophy in hoggets. Details have not been published but the disease occurred following feeding on turnips and swedes for four months followed by transport by road and rail. Hartley has used the term "transport muscular dystrophy" to describe these cases. Muscular dystrophy which can be cured and prevented by vitamin E frequently affects calves in the North of Scotland (Sharman, 1954) but until recently no cases had been noted in sheep of any age. In 1954 Watt and his co-workers at Edinburgh diagnosed the disease in one of a group of hoggs wintering in Inverness-shire. In this case meningitis appeared to be the primary condition to which the muscle change may have been secondary.

In this paper three outbreaks of muscular dystrophy are recorded, all in hoggs at the end of the wintering period.

First Outbreak

A group of 300 Cheviot hoggs from Sutherland spent the winter in the Black Isle. From November till mid December they were on grass; after that their diet consisted solely of yellow turnips, *Brassica campestris var rapa*, with a short spell on swede turnips, *Brassica campestris var rutabaga*, during a snowstorm in February. They wintered well and were in good condition when they were returned to their home ground on April 1st, 1955. While being loaded on to the lorries two hoggs were seen to be slightly stiff but the others seemed to be quite normal.

On arrival the hoggs were left overnight in a small field so that they could be dipped the next day before being put back on the hill. The following morning two hoggs were dead and four were recumbent. These, when lifted to their feet, could stand only for a short time. Many of the others were unwilling to move and could be caught easily. None was seen to be grazing, although this is not unusual in hoggs freshly back from the wintering.

By April 3rd six hoggs had died, some suddenly, others after a period of recumbency. Many more were recumbent and over 100 were visibly affected. The degree of abnormality varied from a slight awkwardness in the gait, the hind legs being moved rather stiffly forward so that the hind-quarters swayed as the animal walked, to a complete inability to stand. Several were seen to pass reddish coloured urine.

The farm was visited on April 6th by which time 12 hoggs were dead and fully half the flock was affected to some extent. Several recumbent hoggs were examined. They were bright and alert, but their conjunctivae were, in many cases, injected or discoloured, but there was no pyrexia; some had accelerated respirations but without abnormal lung sounds. Deep palpation failed to elicit any evidence of abdominal pain. Stiffness was most commonly present in the hind legs. The joints in the affected limbs were not swollen or painful. The affected legs could be moved in response to pain but only weakly and in an inco-ordinated manner.

Blood samples were taken for calcium, magnesium, and inorganic phosphate estimations. None showed any marked deviation from the normal.

Post-mortem Findings

Two hoggs which had died the day before were examined. One showed lesions suggestive of enterotoxaemia with epicardial haemorrhages, excess pericardial fluid, degenerated kidneys and inflammation in the small intestine with haemorrhages in the bowel wall. The other was not so decomposed and the only abnormality noted was a severe pulmonary congestion. The skeletal muscles were not examined. In neither case were any poisonous plants found in the ruminal contents and examination of the kidney cortex for lead showed that no abnormal quantity was present.

Two of the most seriously affected hoggs were taken to the laboratory for a *post-mortem* examination which was performed on April 7th. One of these hoggs died on the morning of the 7th; the other was alive and although completely paralysed was not comatose.

Examination of the first hogg showed evidence suspicious of enterotoxaemia, but no toxins could be demonstrated in the gut contents. The second hogg was killed with chloroform and examined. The major organs showed no significant changes but

there were lesions comparable to those of muscular dystrophy in cattle present in both fore and hind limbs. The affected muscles were greyish-white in colour, much less resilient than normal and easily torn by the fingers. Close inspection revealed the presence of numerous pin-point deposits of calcium in the fibres; here and there these deposits were grouped to form plaques of up to ¼ inch in length. In every case where a muscle was dystrophic its counterpart on the opposite side was also affected. A careful search was made for myocardial lesions but none was found.

Histologically, affected muscle showed patchy staining with haematoxylin and eosin. Some fibres, or parts of fibres, showed an enhanced eosinophilia. Many fibres were swollen and showed a loss of striation. Hyaline degeneration was widespread. Vacuoles were present in a few fibres and many others had undergone fragmentation. It was noticeable that normal muscle fibres were present even in severely affected areas. In contradistinction to the lesions that occur in calves in this area there was only slight proliferation of the sarcolemmal nuclei and calcification was very widespread. Calcium deposition had taken place within the muscle fibres and in many cases the entire fibre had become calcified.

A creatine estimation carried out on two portions of dystrophic muscle gave figures of 66 mg. and 61.4 mg. per 100 gm. of fresh tissue, which is low enough to confirm the presence of dystrophy in a calf muscle (Blaxter *et al*, 1952).

Sequel

Ten days after the first case, the majority of the affected hoggs showed a slight improvement, but out of about 60 which had been seriously affected 24 had died. Sixteen animals were still recumbent or able to walk only with great difficulty. Four of the worst were given 400 mg. racemic alpha tocopheryl acetate* daily by the mouth for three days and recovered within 10 days, the other 12 recovered spontaneously in approximately three weeks.

Second Outbreak

This outbreak occurred on a hill farm in Easter Ross. On the morning of April 4th, 250 hoggs were bought back by lorry from the Black Isle where they had been wintered mainly on turnips. They were dipped and put on to the hill that afternoon. The shepherd, while taking them up the hill, noticed that many were lagging behind. By the time they were on the hill, twelve were very stiff and the rest were nearly all affected in some degree. None of the hoggs made any attempt to graze. Next morning two were found dead and two others were recumbent. The flock was then brought down the hill in easy stages, leaving the recumbent animals behind.

On April 6th the dead hoggs were subjected to autopsy. Decomposition was fairly well advanced in both. One had pin-point haemorrhages on the epicardium, excess pericardial fluid and very degenerated kidneys, while the other showed only a slight excess of pericardial fluid. As muscular dystrophy was not then suspected no search was made for lesions in the skeletal muscles. There was no obvious myocardial dystrophy.

The two recumbent hoggs were examined. One lay on its brisket. It was quite alert with normal temperature, respiration and heart sounds. The other was on its side and appeared to have some abdominal pain. Its temperature was 105° F., the conjunctivae were injected, and respiration was rapid and shallow. Calcium, magnesium and inorganic phosphate determinations showed the blood levels to be normal. These hoggs died the next day, when four more became recumbent. During the following two weeks the appetite of the flock improved quite rapidly, the stiffness slowly disappeared and the recumbent animals recovered without treatment apart from being housed and hand fed.

There is no direct evidence that this flock was affected with muscular dystrophy, but the similarity of the history and clinical findings to those of the previous outbreak suggest this was the case.

Third Outbreak

The third outbreak was in North Country Cheviot hoggs on a farm in Easter Ross, which had wintered similar sheep successfully for many years. The first cases were seen on April 9th. They occurred in a ewe hogg flock and in all 18 of the 115 ewe hoggs were affected. There were no cases in the wedder flock of 300 although the two flocks were separated only by wire fences. The wedders had been fed more generously; in particular they had received 1 lb. per head per day of a concentrate mixture (oats 80 per cent., maize and a little barley 17 per cent., fish meal 3 per cent.,) from November 1st till April 4th. The wedders were folded on yellow turnips on November 1st, a month before the ewe hoggs which were still on grass. While both flocks were being folded they had two-year-old hay *ad lib*. The normal custom on this farm is to fold the hoggs on swede turnips from late February onward, but in 1955 because of prolonged snow, both groups were fed cut swedes from the end of January in addition to hay *ad lib*. This resulted in a more rapid growth-rate than usual. The wedder hoggs, having benefited from the concentrates, were fat enough to be sent for slaughter on April 4th. On the same day the ewe hoggs, all of which were in good condition, were turned into a field of old grass where young cattle were grazing. These cattle chased the sheep and caused a good deal of excitement. This continued for the whole of the first day. Five days later the first case of muscular dystrophy developed. During the following six days eight hoggs died, four became very stiff, and six or more showed slight muscular stiffness.

Post-mortem Findings

One detailed *post-mortem* examination was carried out and the skeletal muscles of a second carcase were examined at the slaughterhouse. In both cases some of the shoulder and thigh muscles were grey-white in colour and tore easily. There were fine granular cal-

* "Ephynal," Roche.

cium deposits within the fibres. Other muscles, notably those of forearm, gaskin and diaphragm, were normal in colour and consistency. The heart of a hogg which had died suddenly after being stiff for a day was examined. It had a 1 inch by ½ inch zone of calcification in the wall of the right ventricle about 1 inch ventral and parallel to the coronary band. The lungs and liver were congested and death appeared to be due to heart failure.

The histological picture was similar to that seen in the first outbreak. Biochemical examination of an affected infraspinatus muscle gave a creatine content of 57.1 mg. per cent. and a calcium content of 399 mg. per 100 gm. The latter figure is 10 times the normal concentration found in adult muscle.

One very stiff hogg was examined clinically. It would stand or walk only with great reluctance. It walked with very short steps keeping all four feet close together. After a minute or two its limbs began to tremble violently and it collapsed. Palpation of thigh and shoulder muscles showed that some, the affected ones, were markedly less resilient than others.

The slightly stiff hoggs were left untreated and they all recovered in six to ten days. The very stiff cases were given 400 mg. tocopheryl acetate* daily by mouth and recovered in two weeks.

Discussion

Of the three outbreaks described the third appears to have been one of uncomplicated muscular dystrophy. In the other two outbreaks the actual cause of many of the deaths is unknown. Enterotoxaemia may have been present; two field *post-mortem* examinations and one carried out in the laboratory did suggest this possibility, but, on the other hand, no clostridial toxin could be detected in the intestinal contents. As the lesions of cardiac dystrophy in the sheep appear to be small it is possible that these were overlooked, especially since decomposition was present in most of the carcases examined. It is probable, too, that some of the deaths in the hoggs crippled by skeletal muscular dystrophy were due to the effects of exposure. The passage of reddish coloured urine which was reported in the first outbreak is in agreement with the description that Dodd (1954) gives of the disease in hoggets in New Zealand. The colour is presumably due to myoglobinuria. This is not seen in the calf disease in this area.

It is the common practice in this area to feed only turnips to wintering hoggs, so that the fact that muscular dystrophy occurred on the three farms for the first time in 1955 cannot be attributed to changes in feeding except possibly in the third outbreak where the feeding of sliced instead of whole turnips caused an increase in growth rate. It would seem more likely that the prolonged frost and snow in the winter and spring of 1955 was in some way responsible for exciting the condition. In this connexion it is interesting to note that Cotchin's outbreak in lambs in Berkshire occurred after the unusually severe winter of 1947. It is probable that the prolonged winter feeding of the hoggs with turnips, known to be very low in vitamin E, so depleted the vitamin E reserves that the combination of cold and exercise incidental to the movement of the sheep to the hill pastures precipitated the condition. In the third outbreak described it is interesting to note that the disease did not appear in the wedder hoggs which had received a proportion of concentrates along with turnips; this, despite the fact that they were transported from the farm to Glasgow for slaughter, a journey of 200 miles which must have subjected them to considerable stress. On arrival at the slaughterhouse they were all apparently normal. These animals were on turnips for a month longer than the ewe hoggs and, therefore, it would appear that the concentrate mixture contained sufficient vitamin E to meet their requirements.

Muscular dystrophy does not appear to occur in lambs in this area, whereas in most parts of the world where this disease has been reported in sheep they are more severely affected than older sheep. This must be attributed to the fact that here in-lamb ewes are out-wintered and receive a varied diet. When turnips are fed to ewes they form a much smaller proportion of the diet than is the case with hoggs. Hill ewes are on rough grazing all winter, and although the herbage does not supply sufficient energy to maintain body weight it does not predispose to muscular dystrophy. This is also the case with cattle; the disease is virtually unknown in the calves of out-wintered cows but is common in those of housed cows fed on straw and turnips (Sharman, 1954).

Summary

Three outbreaks of muscular dystrophy in one-year-old sheep (hoggs) are described; the disease developed following exercise at the end of four to five months of winter feeding mainly on turnips.

In the third outbreak the disease did not appear in an adjacent wedder flock on the same farm which, in addition to turnips, was receiving a concentrate supplement. The presence of muscular dystrophy was confirmed histologically and biochemically. The lesions were usually calcified.

Treatment with alpha tocopheryl acetate did hasten recovery but spontaneous recovery was common.

Acknowledgments.—We wish to express our thanks to Messrs. J. A. Brown and W. R. Sutherland of Invergordon, and Mr. G. McLeod of Dornoch for bringing these cases to our attention, and to Mr. P. L. Shanks for his advice and guidance.

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* "Ephynal," Roche.

Scottie Cramp

BY

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"SCOTTIE Cramp" is the very descriptive name given to a condition occurring only in the Scottish Terrier, characterised by intermittent spasticity of the limbs and provoked by exercise.

The symptoms resemble those of intermittent claudication in man and cramp in the racing Greyhound. The features distinguishing Scottie cramp from the latter are that, while spasticity occurs during normal locomotion at slow gaits in the one, in the Greyhound it occurs during violent exercise at the fastest gait and that, while an affected Scottish Terrier cramps up consistently on exercise, it is well recognised that in the Greyhound its occurrence is irregular even in known affected dogs.

Cases of Scottie cramp vary in intensity, from dogs which show only a slight abnormality of hind limb action during exercise to those which show severe spasticity of fore and hind limbs and the trunk after as little as 100 yards at a trot. Symptoms are first noted at five to six months of age in most cases and the condition is fully developed by 10 to 12 months: two cases of slight to moderate severity have been met in which spontaneous recovery has occurred at about seven years of age. One curious feature is that pleasurable excitement, *e.g.* anticipation of a walk or slight sexual stimulation, predispose to the rapid onset of an attack of cramp, whereas unpleasant excitement, *e.g.* apprehension consequent upon clinical examination, inhibits cramping. The latter is most noticeable as it is virtually impossible, when examining a case, to provoke an attack even after as much as six 100-yard sprints; whereas at normal exercise the same dog will cramp up after 100 yards.

Symptoms vary from an altered gait with either a somewhat "string-halt" type of action or simultaneous use of the hind limbs in a galloping movement while the fore limbs walk or trot, to a complete cramping of the whole musculature, commencing in the hind legs with exaggerated flexion, spreading to the trunk with the body becoming flexed and then to the forelegs, which also show extreme flexion and eventually a type of tetanic spasm: in such a case the dog falls over rolled up into a ball like a hedgehog. In all but the slightest cases, when the attack is fully developed the dog falls over.

Recovery from an attack occurs in a matter of minutes, entirely spontaneously due to muscular rest, although in most cases owners pick up the affected animal and massage the limbs, which probably hastens recovery. Further attacks of cramp will occur indefinitely after a similar amount of exertion. On clinical examination affected dogs appear to be in normal health. A family incidence has been recognised by some Scottish Terrier breeders.

The condition, while well recognised, is far from being a common one, and many clinicians have never met a case. The author has had the opportunity of seeing some eight to ten cases in a period of 18 years, which is apparently rather more than the average, and this may give some idea of its incidence.

Treatment, until recently, has apparently had no bearing on the course of any given case. Various theories have been advanced as to aetiology and corresponding treatments propounded including sedation, heart stimulants, vitamin B, calcium therapy and so on. To the best of the author's knowledge no treatment has given significant results, the most having been temporary and slight improvement in mild cases, insufficient to warrant continued therapy, although Singleton reports the successful use of calcium injections in puppies.

In August, 1955, a two-year-old Scottish Terrier bitch was presented for examination with the history that for more than a year she had always gone lame on exercise. Careful enquiry elicited the fact that slight symptoms had been noted from about the sixth month, that these had become more severe until about one year old and had remained stationary since then. Symptoms commenced after about 200 yards exercise, at first the left hind leg being raised, followed almost immediately by the right, and then the dog falling over on its right side. Recovery followed rest, and then the sequence of events was repeated. The owner's comment was that "life was a misery."

Routine clinical examination revealed no abnormality either of general health or of either hind limb. The dog appeared to be a normal, slightly nervous Scottie, in quite good condition.

The last case of Scottie cramp seen in this practice was several years previously, hence it was felt desirable to investigate the possibilities of some of the recently developed vaso-dilator drugs as it is the author's belief that these cases are due to vascular spasm, probably of a neuro-vascular type. After discussion with a medical colleague it was decided to try beta-pyridyl-carbinol, the alcohol corresponding to nicotinic acid.* At the same time it was learnt that massive doses of vitamin E have been used empirically with some success in intermittent claudication in man. It was known that response (if any) to beta-pyridyl-carbinol would be rapid, whereas response to vitamin E could only be slow, hence the dog was put on both products simultaneously. The owner of this patient had some nursing experience and it was explained that dosage would have to be estimated on results and much left to her observation and discretion. Beta-pyridyl-carbinol was started at 25 mg. twice daily and increased to three doses daily after a few days. Vitamin E as alpha-tocopheryl acetate† was prescribed at 100 mg. daily. A report was received after two weeks, indicating that no

* Ronicol, Roche Products.

† Ephynal, Roche.

(*Concluded at foot of col. 1 overleaf*)

The Production of Ducklings Resistant to Virus Hepatitis

BY

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DUCK virus hepatitis is primarily a disease of young ducklings. It was first recorded on Long Island by Levine & Fabricant (1950) and in England by Asplin & McLauchlan (1954). The outbreak which was diagnosed in Norfolk in the autumn of 1953 was followed by a series of six confirmed outbreaks during the spring and summer of 1954. Reports indicate that the disease has continued to be a cause of mortality during the past year. Fabricant & Levine (1950) demonstrated that the serum of ducklings which had survived the disease when injected into susceptible birds before the onset of symptoms, had a spectacular prophylactic effect. Arrangements were made on Long Island whereby a pool of processed serum, obtained at the time of slaughter of survivors for table use, was held available for injection at the first sign of disease in young ducklings. Success of this practice would seem to depend on the continued presence of the disease for the provision of immune serum and an organisation capable of getting the serum with great speed to the menaced ducklings. This latter point is of importance since many ducklings die within 30 hours of exposure to a virulent strain of virus.

The rapid development of age resistance is a striking feature of this disease. Whereas the mortality may be as high as 90 per cent. in ducklings of one to three weeks of age, at four weeks losses may amount to no more than a few sporadic cases.

These two observations—the efficacy of immune serum and the early development of age resistance—suggested that effective control might be obtained in ducklings hatched from eggs of actively immunised ducks. This would depend upon the conveyance of sufficient antibody through the egg to protect the newly-hatched duckling during the critical first weeks of life. The results presented in this paper show clearly that this can be achieved.

Methods

The experimental stock consisted of ducks which had survived serum protection tests carried out by the writer's colleague, Mr. G. B. Simmins, in 1954. On April 15th, 1955, they received an intramuscular injection of 0.5 ml. embryonic fluid of duck hepatitis-infected embryonated fowl eggs. Collection of eggs for hatching was commenced 15 days later and was continued during the next 130 days. A control pen of ducks which had had no contact with duck hepatitis virus was maintained at a different farm. The incubation of eggs from "immunised" and "non-immunised" stock was synchronised. At intervals after hatching all the ducklings were exposed to a virulent virus. In experiments 1 and 2, one third of each group of ducklings received 0.1 ml. undiluted egg propagated virus by intraperitoneal injection: these ducklings were then placed in contact with the remaining two thirds. In other experiments all ducklings received the same dose by intraperitoneal injection.

Results

The breeding stock, which were in full production when they received the immunising injection of April 15th, showed no evident reaction. The results of the challenge tests are presented in the tables. Except for one duckling in experiment 1, none of the progeny of the immunised ducks died. This one duckling is not believed to have died as a result of hepatitis

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Scottie Cramp

improvement had occurred, and in addition that the dog was very depressed, presumably due to the hypotension caused by the beta-pyridyl-carbinol. As no response to this drug had occurred it was decided to discontinue it after a further two weeks but to maintain the alpha-tocopheryl acetate at 100 mg. daily as before.

The dog was re-examined some five weeks after institution of treatment; there was now considerable improvement which had been slow and gradual from the third to fourth week of treatment; exercise tolerance was now one mile, with no sign of cramping. The dog appeared more relaxed and was noted to be considerably longer-bodied than she had seemed at the first examination; her thighs were perceptibly warmer. At this point the vitamin E was reduced to 50 mg. daily. A final report has now been received on this case (February, 1956) to the effect that exercise tolerance is now 1½ miles, including galloping and playing at exercise, summed up by the owner as "she is now a treat to take out." The sudden extreme cold caused some very slight evidence of cramping but not of any significant degree. It is proposed to continue vitamin E indefinitely.

There seems little doubt that the response in this case is due to the alpha-tocopheryl acetate on the grounds of long time lag before response, and continuation of improvement after the beta-pyridyl carbinol had been withheld. Spontaneous recovery has never been encountered previously in so young a dog, certainly not in a case of this severity.

The low incidence of this condition would appear to justify a description of Scottie cramp, including the successful treatment of one case, in the hope that other clinicians encountering this condition will give this line of therapy a trial, in order to refute or reinforce the author's belief that vitamin E may be of considerable value in intermittent claudication in the dog.

TABLE I

MORTALITY FOLLOWING CHALLENGE WITH HEPATITIS VIRUS IN THE PROGENY OF " IMMUNISED " AND " NORMAL " DUCKS

Experiment number	Age at challenge (days)	Progeny of " immunised " ducks				Progeny of " non-immunised " ducks		
		Period between immunising infection and production of eggs	Number of ducklings	Mortality	Mortality per cent.	Number of ducklings	Mortality	Mortality per cent.
1	3	15– 20 days	34	1	3	30	29	96·7
10	7	110–117	20	0	0	7	5	71·5
2	12	29– 33	49	0	0	36	31	86·1
8	14	97–103	9	0	0	6	4	66·7
9	14	104–110	21	0	0	12	12	100
11	14	118–124	18	0	0	13	8	61·5
12	14	125–130	13	0	0	9	7	77·8
4	21	57– 61	50	0	0	55	11	20
7	21	90– 96	47	0	0	45	3	6·7
5	28	75– 81	50	0	0	53	0	0
6	35	82– 89	37	0	0	30	0	0
3	56	42– 47	6	0	0	12	0	0

since it had a coliform infection of the yolk-sac and the virus could not be demonstrated in the duckling's liver.

It will be seen that of the ducklings challenged at 14 days of age or younger, 96 of 113 hatched from eggs of non-immunised ducks died, whereas only one out of 164 from the immunised stock died.

Experiments 4 and 7, in which challenge took place at 21 days, demonstrate the onset of age resistance. No ducklings died when the challenge was made at 28 days or older. This is in contrast to experience in the field where mortality sometimes occurs in ducklings of four to five weeks of age. The resistance of our ducklings at four weeks of age may have been partly the result of housing under warm, dry and quiet conditions. Chilling and frequent disturbance seem to aggravate the symptoms and increase the mortality. In field outbreaks a dual infection with hepatitis virus and Salmonellosis is a common finding.

Examination of the daily distribution of mortality (Table II) indicates the rapid onset and brief but violent course of the disease. Although some groups of ducklings were kept under observation for periods of up to eight weeks after infection, no deaths occurred later than the sixth day after challenge.

TABLE II

DAILY DISTRIBUTION OF MORTALITY IN DUCKLINGS FOLLOWING CHALLENGE WITH HEPATITIS VIRUS

Progeny of	Total challenged (all ages)	Mortality							Total Mortality
		1st	2nd	3rd	4th	5th	6th	7th	
" Non-immunised " ducks ...	308	12	44	48	3	2	1	0	110
" Immunised " ducks	354	0	0	1	0	0	0	0	1

No decline in resistance of ducklings hatched from eggs laid up to 130 days after immunisation is shown by the tests. The trials had to be discontinued at this point because the ducks had largely ceased egg production.

Discussion

The results in this paper clearly indicate the practicability of hatching ducklings resistant to hepatitis. The " immunisation " of breeding stock was carried out making use of the natural age resistance of the grown duck to live field virus. The use of virulent virus for this purpose has obvious objections since it would provide a hazard to young susceptible ducklings which might become exposed to it. This objection could be outweighed if the disease was widely prevalent.

A satisfactory solution might lie in the development or detection of a virus strain of low virulence. An examination of a number of strains at this laboratory had indicated that variations in virulence do in fact exist.

A knowledge of the duration of infectivity of the duck and the viability of the virus outside the body is of obvious importance. At the moment there is little published information available.

Summary

Ducklings hatched from eggs of non-immunised stock were very susceptible to hepatitis virus during the first two to three weeks of age, thereafter they rapidly develop age resistance.

Ducklings hatched from breeding stock which had been inoculated with duck hepatitis virus were resistant to challenge with virulent virus during the susceptible age period.

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The Isolation of *Salmonella gaminara* from Two Calves

BY

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Introduction

IN his survey of salmonellosis in cattle, Field (1948) stated that *S. dublin* followed by *S. typhi-murium* were the commonest species, although other members of this large group of enteric bacteria are occasionally recovered. Bruner & Moran (1949) reported the isolation of 15 different types from cattle ; Field (1949) isolated eight types and Simeone (1947) six types. The present communication records the isolation of *S. gaminara* from two calves. This organism was first recovered in Uruguay from a child suffering from acute gastro-enteritis (Hormaeche & Peluffo, 1939). As far as the writers are aware it has not been reported previously in cattle.

Description of Outbreak

For some years there had been occasional deaths in young calves in a small herd of dairy cattle. In addition there had been a certain amount of unthriftiness in the older store animals, which could be attributed to parasitic gastro-enteritis and lung worm infestation. There were no signs of ill-health in the adult stock. The herd was attested.

At the time of our first visit two animals were sick ; one was a 10-month-old heifer suffering from husk and the other a six-week-old calf. The latter was housed in an out-building with a group of older animals and separated from them by a wooden partition. It was receiving a little hay, a few calf nuts and " gruel." According to the owner, the animal had been sick for about a fortnight, passing alternately soft and hard faeces, but was now making a slow recovery. It was somewhat stunted in growth and had a slight cough. Its temperature was normal. A faeces sample was collected from this animal and from three other calves.

In addition to a routine examination for worm eggs and larvae, each sample was examined for the presence of *Salmonellae* using an enrichment technique. An organism was isolated from the faeces sample of the sick calf which, after preliminary biochemical and seriological examination, was tentatively regarded as a member of this group. A specimen culture was submitted to the Veterinary Laboratory, Weybridge, where the organism was identified as *S. gaminara* with an antigenic formula XVI, d—— 1, 7. Further visits were made to the farm, when it was discovered that the sick calf had been placed in a loose box with eight other calves of varying ages. *S. gaminara* was isolated once more from the faeces of the original calf and from another one in the group.

An opportunity was also taken to examine some human excreta but with negative results. Nevertheless, since the organism was first recovered from a child, we felt that the Divisional Medical Officer should be informed of our findings. It transpired that the farm under review supplied the milk to the local village school. There had been reports—invariably several days, or even weeks old, of repeated " food poisoning " outbreaks. This would suggest a possible link between the recovery of *S. gaminara* in the calves and the " food poisoning " in the children attending the school.

Acknowledgments.—We are very grateful to Mr. W. J. Sojka, M.R.C.V.S., of the Weybridge Veterinary Laboratory for typing the organism and to Mr. H. I. Field, M.SC. M.R.C.V.S., for his helpful advice and criticism.

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Zinc Phosphide Poisoning in a Mule

BY

M. A. PETRIS

Cyprus

THOUGH there have been several reports on zinc phosphide poisoning of sheep and cattle and their symptoms, and *post-mortem* lesions are fairly well known, there has never been any record of such cases in equines.

I hope, therefore, that a case of such poisoning in a mule will be of some interest to veterinary surgeons in whose districts zinc phosphide is used for the eradication of the field mouse.

History

A number of dried figs containing zinc phosphide had been scattered in a field. The mule had grazed in this field and was seen to pick up several of the figs.

Symptoms of poisoning were observed a few hours later, whereupon the owner treated the mule with mixtures of oil, brandy, etc. No improvement was observed, and qualified assistance was called in 24 hours after the onset of symptoms.

Symptoms

On my arrival the animal was found in a collapsed state with temperature 97° F., heavily congested conjunctiva, blood-stained anal discharge, distressed breathing, and convulsions followed by tetanic spasm of the limbs. The symptoms were followed by death in 15 minutes.

Post-mortem examination

The following lesions were observed on *post-mortem* examination.

Serous fluid in abdominal and thoracic cavities, petechial haemorrhages on peritoneum, acute gastritis, enteritis with blood-stained intestinal contents, petechial haemorrhages on the outer intestinal surface, haemorrhagic lymphatic gland, congested liver, con-

(*Concluded at foot of col. 1 overleaf*)

The Use of Transfixion Screws for the Internal Fixation of Fractures in Small Animals

BY

GORDON C. KNIGHT

Beaumont Animals' Hospital, Royal Veterinary College, London

STAINLESS steel pins and plates have both proved very effective for the internal fixation of various long bone shaft fractures, but other fractures on account of their intracapsular or near intracapsular nature and disparity in size of the fragments, are not suited either to intramedullary pinning or plating. From time to time such fractures confront the veterinary surgeon dealing with small animals and present comparative special difficulty in internal fixation. In a number of these cases the use of transfixion screws has given encouraging results, the following four classes of fractures having been treated by this means:—

1. The intercondyloid fracture of the humerus separating the distal lateral condyle. This is the larger condyle, bears more weight than the medial, frequently becomes grossly displaced after separation, and thus complicates the fracture with joint dislocation.

2. The olecranon fracture involving the articulation with the humerus.

3. The supracondylar femoral fracture which separates and displaces the distal extremity at or near the metaphysis.

4. The femoral neck or trans-cervical fracture. Nos. 1 and 2 are intracapsular; No. 3 often comes into the category, and No. 4 can do so.

Transfixion Screws

A variety of non-toxic stainless steel screws with appropriately-sized twist drills are available for human bone surgery and many such screws are suitable for dogs of medium size upwards. The requirements of fractures in cats and very small breeds of dogs are more difficult to meet, as there are very few ready-made appliances which can be used or easily adapted for the purpose. This paper, however, is concerned only with the internal fixation of fractures using readily obtainable surgical non-toxic screws. It may be added that stainless steel countersunk and round-headed screws, fully or partly threaded, as made for joinery and non-surgical purposes, are sometimes suitable for transfixion in small-animal bone surgery.

No. 1 The Intercondyloid Fracture of the Humerus Distal Extremity

This intracapsular fracture can occur in dogs of any age, but is probably more common in the young. Force, suddenly applied distally to the humerus in the direction of its long axis, can result in fracture and displacement of the lateral condyle, predisposed by its bearing more weight than the medial condyle. A dog jumping down and taking weight suddenly on one or both front legs is liable to the injury, and cases are on record of intercondyloid fractures of both humeri occurring at the same time in this way. Correct diagnosis of the fracture can often be made from the history and clinical symptoms, but a radiograph of the elbow joint in the antero-posterior or postero-anterior plane is certainly necessary if open reduction and internal fixation is to be attempted.

The Operation

The animal is given suitable general anaesthesia assuring good relaxation and, after routine aseptic surgical preparations, an incision is made through the skin along a line from above to below the lateral epicondyle, the length of the incision varying with the size of the dog. This incision will expose the borders of the medial head of the triceps muscle which, in turn, may have to be incised to expose the upper fracture site which is across that part of the humerus forming the lateral border of the olecranon fossa or, more commonly, the supratrochlear foramen. It is important that this site is well exposed and then cleared of incarcerated soft tissue. The intercondylar part of the fracture must also be cleared of soft tissue as far as possible to allow maximal reduction of the displaced fragment. The difficulty of this reduction increases disproportionately with the age of the injury; thus the advantage of operating as soon as reasonably possible cannot be over emphasised. The fractured lateral condyle, having been restored to its correct position, can be held in place by an assistant using a blunt-pointed bone awl or, in some

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Zinc Phosphide Poisoning in a Mule

gested kidneys. Intense petechial haemorrhages in the myocardium and endocardium.

The poison could easily be detected in the stomach contents from the characteristic odour of phosphine.

Summary

A case of zinc phosphide poisoning in a mule is reported. Symptoms and *post-mortem* lesions are described.

Acknowledgment.—I should like to express my thanks to Mr. R. W. Crowther, B.SC., M.R.C.V.S., Veterinary Research Officer, Cyprus, for his help in preparing this report.

cases, bone-holding forceps. The fractured lateral condyle is then drilled through from a point a little below, and anterior to, the epicondyle, and the drilling continued in the same plane through the medial condyle. While doing this the greatest care must be taken to maintain the fractured condyle firmly in the reduced position in order to ensure, at the first attempt, accurate direction of the drill through the centre of both condyles. Inaccurate drilling may easily damage the articular cartilage and as a result subsequently allow some part of the transfixion screw to be intracapsular. The hole drilled in the lateral condyle is then made larger so that the insertion of the transfixion screw does not separate the fragments. This is done by drilling again with a slightly larger drill. The transfixion screw is now driven in and, engaging the medial condyle, finally draws down the fractured fragment firmly in its correct position. The muscle, connective tissue and skin incisions are then closed by suitable chromic catgut and nylon sutures respectively.

(*See illustrations* 1 *to* 6)

No. 2 Fracture of the Olecranon Involving the Cubital Articulation

This intracapsular fracture commonly results from direct injury to the point of the elbow. Displacement of the fractured olecranon is usually an outstanding feature, due mainly to the pull of the teres muscles, and for this reason little success can be expected from the use of conservative methods of closed reduction and external immobilisation. Drilling the upper and lower fragments transversely to the long axis and then passing through a stainless steel wire suture has been tried but with very indifferent results, probably on account of teres muscle traction and the consequent tendency for the brace to relax. A more reliable method is internal fixation with a transfixion screw passing down through the olecranon fragment well into the ulnar shaft.

The Operation

A skin incision is made posteriorly from a point at the olecranon extremity and continued well below the fracture site. It may then be evident that the ulnar carpal flexor and tensor fascia muscles have been ruptured by the displaced fractured olecranon. In any case these muscles have to be incised to reach the fracture site, close to which medially is the ulnar nerve and collateral ulnar vessels. As in the preceding operation on the humerus, the fracture site must be carefully and thoroughly cleared to allow as much accuracy as possible in replacement of the fractured fragment. Until this has been done complete reduction and successful immobilisation cannot be expected. For sound fixation of the olecranon the transfixion screw must be of such a length that at least half extends distally beyond the fracture site. An incision is made down into the teres tendon attachment on the olecranon and this fragment then drilled from above to below while being held with bone forceps in its normal position in relation to the parent ulna. The hole drilled through the olecranon then needs to be slightly enlarged before the transfixion screw is driven into the lower fragment, so firmly drawing them into apposition. It is desirable to ease the screw head through the teres insertion as deeply as possible in order that the tendon is subjected to as little local compression as possible. The muscle and skin incisions are then sutured as necessary.

(*See illustrations* 7 *to* 9)

No. 3 The Supracondylar Fracture of the Femur

In young animals the site of this injury is usually wholly or partly in the metaphyseal plane and thus the fracture can be wholly or partly an epiphyseal separation; but whatever the animal's age, a little study of the X-ray appearances laterally of these fractures in the supracondylar class shows their unsuitability for internal fixation with full-length intramedullary cavity pins, even if threaded distally. The fracture is usually the result of some road accident, and early clinical examination often shows extensive swelling, pain, and loss of limb function, but no crepitus, the absence of this symptom being due to impaction and quadratus muscle tension. Illustration No. 10 is typical of the injury in a mature dog. In a few such cases prompt manipulation under deep general anaesthesia may reduce the displacement considerably, but experience shows that, by external fixation, this reduction is very difficult to maintain and much less likely to be successful than open reduction and an adequate means of internal fixation.

The Operation

The fracture site can be approached laterally and necessarily entails a generous opening of the joint capsule. A skin incision is made to follow a curved line from above the upper limit of the femoropatellar capsule to a point a little below the level of the tibial crest, the upper half of this incision following the posterior border of the trochlear ridge. The incision is then deepened through the fascia to open the capsule and part the lateral patella ligament. Some upward extension of the incision to free the lateral vastus muscle posteriorly may be necessary, and then the patella with its attachments can be luxated medially to expose the fracture site. By the introduction of a suitable lever, the fragments can be carefully separated and the fracture site then cleared of soft tissue. The difficulty associated with clearing this fracture site and displacement reduction is in general similar to that found in fracture No. 2. The upper fragment is drilled from the fracture site obliquely postero-anteriorly through the cancellous bone and out through the cortex at an angle suitable for the length of the screw judged necessary from the lateral X-ray appearances of the fracture. This angle must be such that it will ensure the screw head engaging sufficiently far from the fracture site to make the fixation mechanically sound. The displacement is then accurately reduced and a probe awl passed through the hole drilled in the upper fragment to make a deep puncture in the cancellous bone of the

GORDON C. KNIGHT.—THE USE OF TRANSFIXION SCREWS FOR THE INTERNAL FIXATION OF FRACTURES IN SMALL ANIMALS

ILLUSTRATIONS NOS. 1 AND 2.—Labrador dog aged four months. Displaced fracture of lateral condyle of left humerus, two days after injury and immediately prior to operation.

ILLUSTRATIONS NOS. 3 AND 4.—Immediately after open reduction and fixation with a 1¼ inch SMO non-toxic fully threaded and countersunk screw.

ILLUSTRATIONS Nos. 5 AND 6.—Fifty-four days after operation. Slight lameness only. The screw was removed on this day. In two weeks' limb function was reported to be normal.

ILLUSTRATION No. 7.—Poodle dog aged two years. Oblique and displaced intracapsular fracture of the olecranon about five days after the injury and immediately before

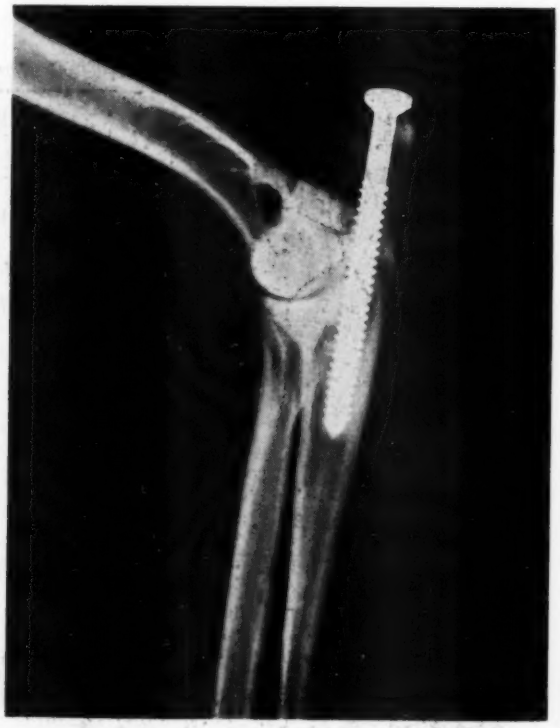

ILLUSTRATION No. 8.—Thirteen weeks after operation. Limb function normal.

ILLUSTRATION No. 9.—Immediately after removal of screw. Limb function became normal in two days.

ILLUSTRATION No. 10.—Corgi dog aged six years. Supracondylar fracture of the femur five days after injury and immediately before operation.

ILLUSTRATIONS Nos. 11 AND 12.—Immediately after open reduction and internal fixation with a fully threaded 1½ inch SMO non-toxic Sherman type screw.

ILLUSTRATION No. 13.—Limb function normal 38 days after operation and immediately before removal of the transfixion screw.

ILLUSTRATION No. 14.—Labrador bitch aged seven months. Transverse fracture of the femoral neck and epiphyseal fracture separation of the great trochanter. Three days after injury.

ILLUSTRATION No. 15.—Fifty days after operation. Normal limb function.

lower fragment. The fracture is then displaced again to allow the lower fragment to be drilled in the same plane as the upper fragment has been, starting in the puncture made by the bone awl. In this operation it is desirable to prevent the drill advancing too far through the intercondylar fossa. As in the previously described operations, the smaller fragment has to be drawn on to the larger by the transfixion screw; thus the upper fragment is drilled "over size." The displacement is finally accurately reduced and the transfixion screw driven in. A little protrusion of the screw-point into the intercondyloid fossa and of the screw-head above the periosteal line does not appear to cause harm. To prevent its undue protrusion the screw-head may be prepared by filing a facet at right angles to the screw-driver slot. The joint capsule should then be closed with interrupted chromic catgut sutures of a suitable size and any muscle or sheath incision similarly repaired. The subcutaneous tissues are sutured to support the capsular sutures and to close dead space. Finally the skin incision is sutured, preferably over gauze pad for protection. Neither bandaging nor any form of external immobilisation should be necessary if the transfixion screw has been correctly placed and is firmly holding the lower fragment in position.

(*See illustrations* 10 *to* 13)

No. 4 The Femoral Neck or Trans-Cervical Fracture

This injury has been found to be the least common of the four, but, unlike some femoral shaft fractures, spontaneous healing without immobilisation appears very unlikely. The femoral neck, of all fractures, threatens permanent lameness as the result of non-union and no useful external immobilisation is easily conceivable. The trauma which dislocates the hip of the mature dog appears to cause epiphyseal separation in the puppy. At an intermediate age, however, the same trauma is likely to cause trans-cervical fracture. Comparatively it is of interest that, in man, fracture of the femoral neck is a risk of advanced years. Positive diagnosis of the fractured femoral neck in small animals requires X-ray examination. Trochanter prominence, limb adduction, shortening, pain and crepitus together clinically provide almost conclusive evidence. Illustration No. 14, in the writer's experience, is of a unique case in which not only was there a trans-cervical fracture, but a fracture separation of the great trochanter. The separated trochanter can be seen superimposed across the fractured femoral neck and the medial femoral cortex, just below the lesser trochanter. In spite of the trochanteric fracture separation the femoral neck fracture was thought to be such that internal fixation was worth-while.

The Operation

A skin incision was made across the trochanteric fossa to a point well below the trochanter fracture level. As a result of the trochanter's displacement with most of the attached gluteal musculature, the femoral neck fracture site was easily exposed and cleared of interposed soft tissue. Had there been no injury to the trochanter it would have been amputated to facilitate approach to the femoral neck. Replacement later would have been maintained with the aid of a wire suture or screw. The femur was then drilled at an angle of about 45° with the long axis from about ¼ inch below the trochanter fracture level to the centre of the neck fracture site. Then employing a similar technique to that used in fracture No. 3, the epiphyseal fragment was immobilised with the transfixion screw. In drilling the epiphyseal neck care was of course taken that the drill did not reach the articular cartilage, and subsequently that the correct length of transfixion screw was used. After the fractured trochanter had been drilled and held in position with a transfixion screw, the musculature was sutured where necessary with chromic 3/0 catgut and finally the skin wound sutured over a gauze pad.

The animal was discharged on the day following operation and not seen again for nearly eight weeks when the limb function was normal. It was then decided that the screws should be left undisturbed.

(*See illustrations* 14 *and* 15)

The Removal of Transfixion Screws after Bone Union

In the earlier cases treated in which transfixion screws were used and satisfactory progress made, the aim was to remove the screw at about four to five weeks after the operation. With increasing experience, however, the tendency has been not to remove a transfixion screw unless its presence is believed to be contributing in some way to the delay in restoration of normal limb function.

ANALYSIS OF OPERATIONS AND RESULTS

	Operations	Normal limb function restored	Useful limb function restored	Failure	Result unknown
Intercondyloid fracture of humerus	14	6	3	1	4
Fracture of olecranon	4	1	2	–	1
Supracondylar fracture of femur	10	5	–	1	4
Fracture of femoral neck	4	2	1	1	–

Acknowledgments.—Grateful acknowledgment for their valuable assistance is made to Mr. Churchill Frost and other colleagues, for Miss B. M. Q. Weaver's indispensable anaesthetic technique in the operations and for Miss E. Harrod's radiography.

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Current Literature

ABSTRACTS

Reversal of the Hypoglycaemia of Fasted Pregnant Ewes. SETCHELL, B. P., & MCCLYMONT, G. L. (1955). *Aust. vet. J.* **31.** 204–9.

Hypoglycaemia is recognised as part of the syndrome known as pregnancy toxaemia and the aim of treatment is to reverse this blood status. The authors investigated the value of glucose, glycerol, exercise, adrenaline, ACTH, and cortisone for this purpose. Trials were conducted in cases of hypoglycaemia in pregnant ewes induced by starvation.

Their findings indicated that all had the desired effect for varying periods. The results obtained with glucose 60 per cent. subcutaneously (3 ml. per kg.) and glycerol with equal parts of water per os (3 ml. per kg.) maintained the resulting hyperglycaemia for 18 to 24 hours respectively. Owing to the local oedema caused by the injection of the former and the shorter duration of its results, preference is given to the latter given once daily as a standard method of treatment in the early stages of pregnancy toxaemia.

Results obtained with exercise alone suggested that given regularly, every day, preferably twice a day, a reversal of the hypoglycaemia can be sufficiently long maintained to act as a preventive line of treatment during the last two weeks of pregnancy.

(There is no indication that any of the experimental ewes showed clinical signs of pregnancy toxaemia, and thus the apparently successful results obtained with glycerine may not of necessity fully apply in every case of the disease.)

Tuberculosis — Dehorning a Possible Hazard. TWEED, W. E., & GRISEDALE, J. A. (1955). *St. vet. J. Minist. Agric., Lond.* **10.** 10.

A report of primary lesions of tuberculosis in the parotid and associated lymph nodes of a small percentage (less than 1 per cent.) of cattle dehorned as adults. No case was found in cattle dehorned by chemical means when calves.

The writers draw attention to the need for asepsis during the operation of dehorning of adult cattle and suggest that the routine inspection of this area in fresh reactors found in attested herds might serve to indicate the origin of the infection.

Some Observations on the Pathogenesis, Spread and Diagnosis of Johne's Disease in Cattle. HOLE, N. H. (1955). *St. vet. J. Minist. Agric., Lond.* **10.** 2–9.

Hole records his personal observations and deductions following considerable experience in laboratory methods of diagnosis of Johne's disease.

Doubt is expressed as to whether the mere presence of *M. johnei* in faeces, or of isolated organisms in intestinal mucus membrane or mesenteric glands is in itself evidence of infection in the absence of any kind of tissue reaction. There would appear to be no consistent association between the presence of lesions, organisms and symptoms either generally or in degree, for extensive typical lesions associated with numerous organisms may be found in animals clinically normal. Spontaneous recovery from infection would also seem likely to occur in certain cases, although this is rare when clinical symptoms have developed. Experience suggests the possibility of some trigger mechanism such as a change in environment converting a "carrier" animal into a clinical case, and even of influencing infection itself. There is some support for the view that the disease runs in families and that intra-uterine infection of the foetus may take place.

In considering the sources and spread of infection on a farm, even if calfhood and intra-uterine infection predominates, the dung of infected cattle still merits consideration, particularly in relation to contamination of water supplies. In this respect, mains-water supplies and provision of troughs are not essentially a safeguard, such being sources of more concentrated infection particularly, it would seem, should the water prove to be acid. Dissemination of the disease from herd to herd focuses attention on the "carrier" cow or animals in the "incubation" stage. The minimum period of incubation is probably a matter of months, but the maximum period would appear to be unlimited.

Since little reliance can be placed on direct examination of faeces or on allergic tests as a means of diagnosis in clinical cases, recourse is now made to a modified complement fixation test on blood serum. Results of large numbers of such tests conducted on animals subsequently examined *post mortem*, indicate that considerable reliance can be placed on a positive reaction as indicating an infected animal. The test fails, however, to pick up a number of infected animals (about 10 per cent.) with established lesions, independent of their clinical status. A number of animals passing the C.F. test are found to harbour *M. johnei* in their tissues but without any observable tissue changes. This points to the need for careful consideration in the application of the test for the purposes of eradication. Further, it does not detect animals in the incubative stage and it is possible that the failure to detect a number of animals which later become clinically affected, may be due to this failure. From work done on vaccinated cattle, it would seem that a restricted localisation of the organisms fails to produce positive blood reaction. Taking all the evidence available, the claim is made that the C.F. test is the most reliable diagnostic method yet available with some place in an eradication scheme.

W. T. R.

THE ROYAL SHOW

The Ministry of Agriculture will be very well represented at this year's Royal Show at Newcastle from July 3rd to 6th. The veterinary section will feature two major diseases, nematodirus disease in sheep and husk in cattle, and will try to show how good husbandry helps to overcome these conditions. A small enclosure containing a family of rabbits is intended to reproduce conditions such as are met with on rabbit-infested pastures, and serve to remind farmers of the advantages of keeping down their numbers.

The Ministry's Agricultural Advisory Service exhibit will show ways of increasing supplies of good quality beef and lamb from the hill marginal lands and the lowland farms in the area.

News and Comment

THE R.C.V.S. ANNUAL REPORT

The Report of the Council of the R.C.V.S. for the year ended March 31st, 1956, has been circulated to members of the profession, but there are several points of interest which may bear repetition in these columns. In view of the many enquiries that are received about the activities of certain animal welfare societies, the report states: " There is no power vested in the Royal College to prevent the establishment of new societies or to prevent the expansion of existing societies." It may be added that, of course, the B.V.A. has no such powers either, and it cannot oblige any welfare society to refrain from actions which members of the profession may regard as objectionable. The report goes on to describe briefly the meetings between representatives of the Royal College, the B.V.A. and the P.D.S.A. and states that: " The Council wishes to make known to the profession the steps that have been taken to place on a sound working basis the relationship between this particular society and the profession generally. In doing so the Council also wishes once more to draw the attention of members to the limits of the power which the College has in this matter."

Private Limited Companies

The Report refers to the many enquiries made by members of the profession about the ethical and legal position which would be involved if a veterinary surgeon or a partnership wished to form a private limited liability company to obtain the taxation advantages which attach to such companies. Having discussed the position, the report says that the Preliminary Investigation and Advisory Committee of the Council concluded that the formation of private limited liability companies is not in the best interests of the profession.

Publicity

A useful statement is made on this subject, particularly in view of the anxiety of a large section of the profession to see the work of veterinary surgeons, and of the whole profession as such, referred to more frequently in the newspapers and on the wireless. Having quoted paragraph A18 of the Guide to Professional Conduct, the Report says: " The Council feels that it should be clear to members that objective articles can be published over members' signatures and qualifications and this applies equally to wireless and television broadcasts."

Members Employed by Commercial Firms

In the light of a letter published not long ago in our columns, the following quotation from the Report will be helpful to members: " A member employed by a firm had been asked by the owner to visit some stock supplied by his firm; on arrival at the farm he found that another member, in private practice, had already been in attendance and had given advice. He therefore sought to meet the other member on the farm and did so, but they were at variance in their diagnosis and treatment. The first member sought advice from the College as to whether in a case like this he had a right, in the interests of his firm, to examine the stock concerned. The advice given him was that: ' Where an owner had asked for the advice of his firm or had given consent to an enquiry by the firm on his premises the member, or any other practitioner employed in a similar capacity, would have a right to carry out any investigations he considered necessary provided that he followed the procedure and guidance given in the Annual Report for the year ended March 31st, 1955.' "

THE FOOT-AND-MOUTH DISEASE RESEARCH INSTITUTE

The report of the Foot-and-Mouth Disease Research Institute for the year 1954-55 was published on June 14th, and we are indebted to the Institute for the following summary.

One of the most recent developments in the study of virus diseases has been the introduction of several modifications of the traditional methods of tissue culture to the growing of viruses. Special attention may be drawn to some recent contributions of the Pirbright Institute in this direction mentioned in the report. It has now been demonstrated that the virus can be grown in calf and pig kidney tissue and in bovine (cattle) amniotic membrane (foetal membranes) and embryonic tissue from a variety of species. This opens up new possibilities of further advances. Thus already it has been shown that in monolayer cultures of pig kidney, it is possible to exhibit plaques (Dulbecco) around the site of infection with units of the virus of foot-and-mouth disease. The counting of these plaques correlated with the virus dilution inoculated gives an estimate of the number of infectious units of the original virus suspension. This adds yet another technique for the counting of virus units (titration of virus) to the two already developed at Pirbright, on the tongues of live cattle (1949) and by the inoculation of unweaned mice (1951). This technique has been shown applicable also to the viruses of vesicular stomatitis and vesicular exanthema, diseases which resemble foot-and-mouth disease clinically but so far have not been found to occur outside the Americas. Reference is made to a fourth method added, which is a "plate" technique. This involves the inoculation of small cultures of cattle tongue epithelial tissue in the cups of "Perspex" plates with different dilutions of virus and virus multiplication is detected by a test known as the complement fixation test.

Culture virus is a convenient source of material for producing vaccines and Frenkel in Holland showed that cattle tongue tissue (epithelium) could be used for growing virus on a large scale. At Pirbright his observations have been extended in studies of the factors which influence the multiplication of the virus, particularly in relation to the ingredients of the virus culture media and on the conditions which will ensure maximum virus growth. Antibiotics, penicillin and streptomycin, are added to the media to control bacteria and it has now been demonstrated at Pirbright that an antifungal agent Mycostatin (Nystatin)

can control the yeasts present in the tongue tissue as collected at the abattoir. It is of interest to note that a permanent laboratory has been set up at the main London abattoir for the efficient collection of tongue tissue and a mobile laboratory has been constructed which provides the same facilities for collection of the large amount of material required from any abattoir in the country.

Other salient features of the report are the observations on strains of the virus of foot-and-mouth disease which have exhibited special animal species adaptation or affinities, the extended use of unweaned mice instead of cattle for many types of experiment, the possibility of regularly infecting chick embryos and chickens by inoculation with the virus of foot-and-mouth disease and comparative studies on the structure of the viruses of foot-and-mouth disease and vesicular stomatitis. Of particular interest are studies on the effects produced by exposure to light of those wave-lengths which are normally present in daylight after passage through glass. The virus of foot-and-mouth disease is relatively resistant to such effects whereas the viruses of vesicular stomatitis, influenza, Newcastle disease, fowl plague and vaccinia were all shown in varying degrees to be susceptible to inactivation by light, that of vesicular stomatitis being the most susceptible.

Last but by no means least are the important world-wide epidemiological surveys which have been carried out by the Pirbright Institute since 1948 involving the systematic examination and immunological classification of samples of virus from newly infected territories or from areas or regions in which surveys of virus types associated with outbreaks have been lacking or incomplete. During the period under review, in addition to the samples from outbreaks in Great Britain, samples from 22 other countries in the continents of Africa and Asia have been examined. Until 1948 only three types of the virus were recognised, O, A and C; but since then the Pirbright Institute has demonstrated three other types, S.A.T. 1, S.A.T. 2, and S.A.T. 3, associated so far only with outbreaks in Africa; and now a new type, ASIA 1, associated with outbreaks in Pakistan, India, Hong Kong and Thailand. These observations are of special significance in relation to the risks attached to world trade in animals, animal products and feeding-stuffs, and hence to the devising of effective methods of control involving, in some cases, vaccination, especially in endemic areas, since recovery from or vaccination against infection with any one of these virus types will leave the animals susceptible to infection with any other type. Only a continuance of these epidemiological surveys will make it possible to assess the distribution of these types or others which may as yet be undetected.

THE ANIMAL HEALTH TRUST

A special donation from an organisation in the United States, to the Animal Health Trust, made it possible for Dr. Wooldridge, the Trust's scientific director, and Dr. Sellers, the director of the new livestock research station, to spend two months in North America. They returned a short time ago and the following notes on their tour have been received.

The two scientists visited 14 universities, six or seven Federal or State research establishments, and a number of independent and industrial research centres. Time was also found to visit various animal hospitals, the research centre at the Bronx Zoological Gardens, the Army Centre for Chemical Research, the Animal Breeder Service at Chicago (the largest organisation dealing with artificial insemination of cattle in the United States), a number of farms engaged in livestock production, and an abbatoir, and meat factory. The opportunity was also taken to discuss with those responsible for the administration of Federal and State services connected with animal disease, the control of meat and milk quality and the diseases common to man and animals.

Generally speaking, the buildings, laboratories and animal accommodation available at these centres was excellent, having been much improved in recent years. At certain centres, in fact, great improvements were still being made. Scientific personnel was reasonable in numbers, though speaking generally the position is similar in North America to that in the United Kingdom, there being a shortage of trained personnel. Veterinary schools generally had greater facilities for the study of farm livestock than are usually available in this country.

There seemed to be a grave shortage of veterinarians, since distances between those engaged in agricultural practice are many times greater than those normally separating practitioners in this country. Small animal practice is lucrative and many veterinarians run their own hospitals which are often advertised in a way which would not be permissible in this country.

The Federal services of the Department of Agriculture are responsible for the control of the major killing diseases where these may spread across State boundaries. Each State is responsible for the control of these diseases within its own borders. Similarly, there is a Federal meat inspection service reinforced by State meat inspection services of varying quality. Meat is fully inspected and is marked with a Government stamp of approval. All this work is carried out under the supervision of veterinarians.

In addition to the Government service, which is akin to that of the Animal Health Division in Britain, and to the many private practices scattered throughout the land, there is in the United States a service of veterinarians employed by the Federal Department of Health, Education and Welfare which works in close collaboration with the medical profession. It is largely occupied with the investigation of outbreaks of human disease arising from animal sources. A similar service in this country might be developed with advantage. In America the work largely concerns the control of rabies, psittacosis, brucellosis and leptospirosis.

Dr. Karl Meyer, a veterinarian, and Director of the Hoover Laboratories in San Francisco has, more than any other person, been responsible for the development of the present methods in operation in the United States for the control of serious diseases of man arising from animal sources. All the diseases mentioned above would appear to be far more serious in the United States than in this country, but it may

be that further work on brucellosis and psittacosis will reveal their presence in this country to a far greater extent than is believed. Rabies remains a serious disease in the United States, and dangerous outbreaks not infrequently occur in different parts of the country. Dr. Wooldridge and Dr. Sellers were able to examine many differing types of animal houses, agricultural equipment and new scientific apparatus. Valuable contacts, indeed friendships, were made with veterinary and other scientists throughout North America, and it is hoped that these will play a part in furthering the educational aims of the Trust through its post-graduate awards.

VICTORIA CROSS CELEBRATIONS

Readers who have noted in the newspapers descriptions of the ceremonies and other functions arranged during the past week to do honour to holders of the Victoria Cross will be interested to know that among those taking part has been Mr. John Vincent Holland who was a veterinary student at Liverpool University before the First World War. Mr. Holland was awarded his Victoria Cross for most conspicuous bravery during a heavy engagement at the battle of the Somme in 1916. He led his bombers through our own artillery barrage and cleared a great part of a village in front. Having started with 26 bombers he finished with only five, capturing 50 prisoners. He was serving with the Lancashire Regiment at the time.

Mr. Holland was the son of a veterinary surgeon who practised in Athy (Eire).

LONG ODDS

Four white-faced Hereford calves were born recently to a cow at a farm at Athens, Georgia. The quadruplet birth is an event that occurs once in about 14,000,000 times among beef cattle, according to professors at the University of Georgia Veterinary School.

FOOT-AND-MOUTH DISEASE

The area described in the Schedule below has been declared an Infected Area for the purpose of preventing the spread of foot-and-mouth disease.

COUNTY OF DORSET

The Boroughs of Bridport, Dorchester and Weymouth and Melcombe Regis.

Petty Sessional Division of Bridport

The parishes of Broadwindsor, Burstock Mosterton, South Perrott, Chedington, Corscombe, West Chelborough, East Chelborough, Beaminster, Bettiscombe, Pilsdon, Stoke Abbott, Mapperton, Hooke, North Poorton, Powerstock, Netherbury, Marshwood, Whitchurch Canonicorum, Symondsbury, Allington, Bradpole, Loders, Askerswell, Chilcombe, Shipton Gorge, Bothenhampton, Burton Bradstock, Chideock and Stanton St. Gabriel.

Petty Sessional Division of Dorchester

The parishes of Melbury Sampford, Evershot, Frome St. Quintin, Up Cerne, Cerne Abbas, Sydling St. Nicholas, Cattistock, Rampisham, Wraxall, Chilfrome, Maiden Newton, Nether Cerne, Godmanstone, Charminster, Stratton, Frampton, Frome Vauchurch, Toller Fratrum, Wynford Eagle, Toller Porcorum, Compton Abbas, Compton Valence, Litton Cheney, Long Bredy, Kingston Russell, Little Bredy, Swyre, Puncknowle, Winterborne, Steepleton, Winterborne Abbas, Bradford Peverell, Winterborne St. Martin, Winterborne Monkton, Winterborne Herringston and Winterborne Came.

Petty Sessional Division of Portland

The parishes of Abbotsbury, Portesham, Langton Herring, Fleet, Chickerell, Bincombe and Portland.

Petty Sessional Division of Sherborne

The parishes of Melbury Bubb and Batcombe.

LEGAL NOTE

A seventy-three-year-old farrier was found guilty at Smethwick recently of practising veterinary surgery when not qualified. Summonses were brought by the Royal College, and additionally by the R.S.P.C.A. The latter was on the grounds of lack of care and humanity. The defendant, who had docked a puppy's tail with a lancet, said he performed minor operations "more as first aid" to help people. He was fined £3.

DOCTORATE CONFERRED

At a General Admission ceremony at the University of Cambridge on June 22nd, Mr. R. K. Archer, M.A., M.R.C.V.S., was admitted to the degree of PH.D., for his thesis: "Studies of the Blood Picture of Equidae, with special reference to the Eosinophil Leucocyte."

Dr. Archer has been working at the Equine Research Station of the Animal Health Trust at Newmarket during the past three and a half years. He carried out the work for his thesis under the supervision of Sir Lionel Whitby, Regius Professor of Physic, working part of the time at the Department of Medicine of the University.

COLONIAL OFFICE APPOINTMENTS

The following is a list of recent promotions, transfers and appointments for the month of June, 1956:—

Mr. A. E. Dorman, M.R.C.V.S., Provincial Veterinary Officer, Kenya, has been appointed Assistant Director of Veterinary Services, Kenya, and Mr. K. J. R. Maclennan, M.R.C.V.S., Senior Veterinary Officer, Northern Region, Nigeria, has been promoted to Principal Veterinary Officer.

Mr. W. Plowright, M.R.C.V.S., Veterinary Research Officer, Federation of Nigeria, has been transferred as a Veterinary Research Officer (Pathologist), E.A.V.R.O., to the East Africa High Commission.

Mr. G. D. Phillips, M.R.C.V.S., has been appointed as a Veterinary Research Officer to the East Africa High Commission.

CONTENTS OF "THE RECORD"

A correspondent this week takes us to task for what he feels to be some of our shortcomings; but in this particular case criticism is a little over-emphatic. It is suggested that no reference has been published in our columns on the subject of vitamin B12 for horses; but this was referred to at length in a paper published on January 21st of this year, at the foot of which were a number of references to additional literature on the subject.

As a matter of interest readers may have noted in a recent Supplement an analysis of our contents over the past year. This showed 72 scientific papers, 33 clinical communications, 57 laboratory papers, with a strong clinical bearing, and 28 general articles.

£10,000 FOR CAMBRIDGE VETERINARY CENTRE

Mr. Heathcoat Amory, Minister of Agriculture, Fisheries, and Food, said in the House of Commons that a new building for the Veterinary Investigation Centre at Cambridge is to be built on the site of the university veterinary school, adjacent to and in keeping with the other buildings. Mr. Amory, who was answering a question by Mr. Hamilton Kerr, said the erection of the building had been made possible by a gift of £10,000 by Lady Brigid von Preussen and her husband.

Lady Brigid von Preussen is a daughter of Lord Iveagh.

MYXOMATOSIS

Addressing the International Union for the Protection of Nature in Edinburgh last week, Mr. R. M. Lockley said that the first attacks of the disease would, in favourable conditions, kill 99 per cent. of rabbits, and the 1 per cent. of survivors did not seem to transmit immunity to their offspring. The virus, however, appeared to become attenuated, and in later attacks killed only 90 per cent. of the rabbits which, too, took longer to die (20 to 30 days instead of 10 to 12). It was easy to foresee that, unless Governments took strong action to exterminate survivors, rabbits would gradually return to their former strength, with the virus gradually weakening and myxomatosis becoming an enzootic non-fatal disease.

B.V.A. CONGRESS AT LEAMINGTON SPA

Hotel Accommodation

In Leamington Spa

Angel, 145, Regent Street, Leamington, Chesford Grange (three miles).

Private Hotels

Alkerton, Binswood Avenue.
Amersham, Kenilworth Road.
Arden, Clarendon Square.
Bankfield, Newbold Terrace.
Oaks Hotel.
Roselands, Binswood Avenue.
Sheiling, Beauchamp Avenue.
Westella, Loam Terrace.
(still available as at June 14th, 1956)

Outside Leamington Spa

Accommodation is available in all hotels outside Leamington Spa—as published in THE VETERINARY RECORD of March 10th, 1956.

Transport.—Coach transport will be provided for some of the functions, etc., where necessary. Tickets may be obtained by requesting them on the usual application form to be published about mid-August.

Luncheon.—Luncheon facilities for Congress members will be provided each day in a special tent to be erected in the Pump Room Gardens, Leamington Spa.

Shakespeare Theatre.—It will be seen from the programme published elsewhere in this issue that a special visit to the Shakespeare Memorial Theatre, Stratford on Avon, is being arranged for interested members on Thursday, September 20th. The play will be "Love's Labour's Lost," and application for tickets for *this particular performance* should be made to the General Secretary, B.V.A., as soon as possible. Seats for 150 have been reserved by the Association.

If any members would care to make their own arrangements for other evenings in Congress week, the programme is as follows:—

September		p.m.	
Mon.,	17th	7.30	"Measure for Measure"
Tues.,	18th	7.30	"Othello"
Wed.,	19th	2.30	"Merchant of Venice"
Wed.,	19th	7.30	"Merchant of Venice"
Thurs.,	20th	2.30	"Love's Labour's Lost"
Thurs.,	20th	7.30	"Love's Labour's Lost"
Fri.,	21st	7.30	"Hamlet"
Sat.,	22nd	2.30	"Measure for Measure"
Sat.,	22nd	7.30	"Measure for Measure"

THE REGISTER OF VETERINARY SURGEONS

The name of Mr. Joseph Patrick Fitzgerald, 18 St. Annes Road East, St. Annes on Sea, Lancs., has been restored to the Register with effect from June 25th, 1956.

MR. WILLIAM KENDRICK

Professor Formston writes:

I shall always remember the first occasion that I met William Kendrick when in 1926, on the advice of friends, I went to ask him if he would take me as a pupil. It was early evening and I waited for him to return from a visit to a patient. In the meanwhile I was being briefed as to what I should say initially and in answer to his inevitable questions. A previous pupil had been sent "packing" after only a few days and he had avowed never to take another. His first question was the one I should have expected but did not—why do you want to be a "vet."? The briefing was of no avail, but the kindly intercession of his wife saw me established for two-and-a-half-years in what was for me a second home. "Bill" Kendrick was proud to be called a "vet," and through contact with him I grew to think highly of that appellation also. He hated humbug and subterfuge and was never afraid of self criticism. He never tired of asking himself the question "why"? He had a scientific approach to all things veterinary and kept himself abreast of modern thought and ideas. He

discharged his responsibilities to me as an extra-mural teacher to the letter, and on innumerable occasions I have been pleased to see the microscope returned to its case at one or two o'clock in the morning.

Through him I learnt the value of the abattoir, knackeryard and Hunt kennels. Nothing was too much trouble for him, and teachers at the Liverpool Veterinary School throughout his life must have been extremely grateful for "material" supplied by him. One had only to ask for something and "Bill" Kendrick left no stone unturned to find it—often with no little effort and some financial sacrifice. He asked for nothing in return other than some advancement in knowledge.

He took a pride in his personal appearance and refused to belong to the sports coat and flannel trouser brigade. I was left at home one morning because my shoes were dirty! It would detract from this tribute to the man if I said he had no faults, and he would have been the first to confess to them. Most, if not all, were pardonable and arose mainly from his inordinate generosity. He gave of his best to his clients and often "forgot" to send in the bill. He was admired and respected by a vast agricultural community as witnessed by the long list of mourners at his funeral. Men like "Bill" Kendrick are difficult to replace and I shall be eternally grateful to him for his teaching and friendship. He will be sadly mourned by his wife and daughter to whom our deepest sympathy is extended.

PERSONAL

Births

FITZPATRICK.—On June 22nd, 1956, to Ruth (née Holmes) wife of R. J. Fitzpatrick, M.R.C.V.S., of Bristol, a daughter, Anna Clariden, sister for Nicholas.

HUGHES.—On June 22nd, 1956, to Adrienne, wife of D. A. Hughes, B.V.SC., M.R.C.V.S., of Moulton, Northampton, a son.

TOOP.—On June 18th, 1956, at the Norfolk and Norwich Hospital to Vivienne (née Marriott), wife of Bryan R. V. Toop, M.R.C.V.S., of 51 Dereham Road, Watton, Thetford, Norfolk, a daughter, Vivienne Jane, a sister for Robert and Jonathan.

WILLIAMS.—On May 3rd, 1956, to Enid, wife of Gareth Williams, B.SC., M.R.C.V.S., of Oakford, Carmarthen, a son.

Marriage

BAKER—MORGAN.—At All Saints' Episcopal Church, Bearsden, on June 22nd, 1956, Norman Baker, M.R.C.V.S., youngest son of Mr. and Mrs. Henry Wise Baker, Balgownie, Seamill, Ayrshire, to Jean, only daughter of Mr. and Mrs. David Morgan, Fiona, 19, Hillcrest Road, Bearsden.

Golden Wedding

RABAGLIATI—DALE.—On July 12th, 1906, at Whitekirk, East Lothian, Duncan Silvestro, son of Andrea Rabagliati, M.D., and Mrs. Rabagliati of Bradford, Yorks, to Lucy Evershed, daughter of Mr. and Mrs. Dale, Scoughall, East Lothian.

Mr. and Mrs. Rabagliati's present address is Fidra, 3, St. Margaret's Road, Edinburgh, 9.

COMING EVENTS

July

6th (Fri.) Meeting of the North Wales Division, B.V.A., at the Golden Lion Hotel, Dolgellau, 2 p.m.

17th (Tues.). Summer Meeting of the Association of Veterinary Teachers and Research Workers (Northern Region) at The Evans Biological Laboratories, Runcorn, 11 a.m.

18th (Wed.) General Meeting of the Society of Practising Veterinary Surgeons, B.V.A., at the Queen Hotel, Chester, 2.15 p.m.

19th (Thurs.). Annual General Meeting of the Supplementary Veterinary Register Division, B.V.A., at 7, Mansfield Street, Portland Place, London, W.1, 2.30 p.m.

20th (Fri.). Summer Meeting of the Eastern Counties Division, B.V.A., at Cambridge, 11 a.m.

Summer Meeting of the Mid-West Division, B.V.A., at the Berkeley Café, Clifton, 2.30 p.m.

28th (Sat.). Annual reunion of the R.V.C. '52 Club at Ye Miller of Mansfield, Goring.

September

16th to 22nd (Sun. to Sat.). 74th B.V.A. Annual Congress at Royal Leamington Spa.

BRITISH VETERINARY ASSOCIATION QUARTERLY MEETINGS

Wednesday, July 11th, 1956—No. 7, Mansfield Street

10.30 a.m.—Organising Committee.

2.00 p.m.—Home Appointments Committee.

3.30 p.m.—Parliamentary and Public Relations Committee.

Thursday, July 12th, 1956—No. 7, Mansfield Street

10.00 a.m.—Veterinary State Medicine Committee.

12.30 p.m.—Finance Sub-committee.

2.15 p.m.—General Purposes and Finance Committee.

Friday, July 13th, 1956—Connaught Rooms

10.30 a.m.—Council Meeting.

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Cumberland. Becklees, Longtown, Carlisle (June 19).

Denbigh. Geuffos Farm, Llanddulas, Abergele (June 19).

Derby. Edge Moor Farm, Parkhead, Tansley, Matlock (June 18).

Hereford. Bank Farm, Adforton (June 18).

Notts. Hill Side Field, Claypole Lane, Dry Doddington, Newark (June 20).

Salop. Steele Farm, Steele Lane, Prees, Whitchurch (June 22).

Staffs. Park Ford Farm, Cheadle, Stoke-on-Trent (June 22).

Warwicks. Four Oaks Farm, Berkswell, Coventry (June 18).

Yorks. Alma Farm, Kirby Misperton, Malton (June 19).

Foot-and-Mouth Disease

Dorset. Coombe Farm, Little Cheney (June 24).

Fowl Pest

Essex. Ebenezer, Western Road, Thundersley (June 20); Solby Wood Farm, Western Road, Thundersley (June 21).

Lancs. Farnworth Estate, No. 19, Wigan Lane, Duxbury, Chorley; Thompsons Farm, Tannersmith Lane, Mawdesley, Ormskirk (June 19); Buckholes Farm, Higher Wheelton, Chorley; Portland Farm, Higher Wheelton, Chorley (June 23).

Lincs. 7, Laceys Lane, Leverton, Boston; Sycamore Farm, Heckington, Sleaford; Dunholme, Lincoln; Fulsby Mill Farm, Tumby, Mareham-le-Fen, Boston; 71, Cameron Street, Heckington, Sleaford (June 18); Quappalle Farm, Sleaford Road, Frampton Fen, Boston; Boston Road, Kirton Holme, Boston (June 19); 61, Church Street, Heckington, Sleaford; The Grove Allotments, Osbournby, Sleaford; Church Cottage, Cammeringham; Stount Road, Faithville, Boston; Rear of 39, High Street, Heckington, Sleaford (June 20); Jenkin Lane, Leverton, Boston (June 21); Broadway, Leedsgate Road, Gipsy Bridge, Boston; Main Road, Old Leake, Boston (June 23).

Sussex. Woods Place, Maynards Green, Horam (June 22).

Yorks. Oakwood House, South Duffield; White Moor Grange, Osgodby, Selby (June 22).

Swine Fever

Ches. Swanley Hall Farm, Acton, Nantwich (June 19).

Dorset. Yarde Farm, Pimperne, Blandford Forum (June 22).

Essex. North End Place, Felstead, Dunmow (June 21).

Hants. Manor Farm, Rockbourne, Fordingbridge (June 22); Middleway, Andover Down, Andover (June 23).

Lancs. Fairwall Farm, Stacksteads, Bacup; Cockhall Farm, Thurnham, Galgate, Lancaster (June 21); Piggery attached to Tripe Works, Hollinwood Avenue, Chadderton, Oldham (June 22).

Salop. Middle Farm, Chetwynd, Acton, Newport (June 22).

Somerset. Midnell Farm, Winsham, Chard; Yallands Farm, Staplegrove, Taunton (June 21).

Staffs. 1, Greenwood Avenue, Chadsmoor, Cannock (June 21).

Surrey. Dents Farm, Lower Kingswood, Tadworth (June 21).

Worcs. Hill Farm, Woodcote Bromsgrove (June 20).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

The Veterinary Record

Sir,—I was interested in the reference to vitamin B_{12} in the letter from Major Hamilton Kirk in THE VETERINARY RECORD of April 7th last. I was recently informed of its use in race-horses by a client, and I felt it a reflection on myself and my profession that I had no information on the subject apart from that contained in trade advertisements. My client was injecting his own horses and was convinced that his success on the course was attributable to the injection; he remained convinced even when I pointed out that the dose he was using was that advised for puppies! I know that I am right in saying that he is wrong—but how much more strength to my arm if I could point to a clinical article or letter giving the opinion of some experienced horse practitioner in England. All I can recall of recent publications on vitamins is an article on the requirements of dogs which definitely comes into the category described by Major Kirk as " high brow."

I have recently had occasion to read up the subject of doping in race-horses and it supports Major Kirk's criticisms of THE RECORD that the only references to it that have so far been found for me by the Royal College Library are in an Australian and an American journal. The latter journal is remarkable for its newsy items and photographs. But one cannot blame a periodical for not publishing what it does not receive, and, sometimes, as with the article on " Veterinary Education in America," THE RECORD is most interesting. It cannot be that the Editorial committee rejects clinical material, and the lack of it, and of other general articles, can either mean that Major Kirk represents a minority of the profession, or that the inarticulate majority are rendered more so by the general " high brow " tone of their official organ.

Yours faithfully,

R. G. MARES.

31, Shirley Gardens,
Hornchurch,
Essex.

June 8th, 1956.

Prolonged Gestation

Sir,—May I record the following in THE VETERINARY RECORD?

An eight-year-old Friesian cow gave birth to a cross bred Hereford heifer calf after an 11-month gestation period. The calf was delivered alive by caesarean section (in the standing position) but died shortly afterwards. It weighed 160 lb.

Yours faithfully,

ERIC WILLIAMS.

Trevaughan,
St. Clears,
Carmarthen,
S. Wales.

June 16th, 1956.

Atomic Intelligence

Sir,—An article in the *Manchester Guardian* of June 21st seems inclined to attribute the apparent increase in brain power observed in young children to the influence of atomic radiation which to a greater or lesser degree has been prevalent in the atmosphere since 1945. Naturally enough the human element may have played some part in obscuring the issues involved; it is quite possible that some of the brilliant questions asked by the ten-year-olds may have been inspired by paternal pride since the briefing of little Charlie with a couple of conundrums to ask the gentleman at the interview is an obvious and effective method of vindicating family honour and erudition. Excluding this possibility, however, and assuming that radiation is capable of exerting a profound influence in the development and activity of brain tissue (which presumably is essentially the same throughout creation) it would seem that this fascinating field of research is one in which the veterinary surgeon can work in the closest collaboration with his medical colleagues, especially as the pates of the majority of our patients are almost constantly beneath the open sky and hence, presumably, are constantly subject to the influence of any rays that may happen to be about.

As sufficient time has elapsed for the appearance of a second or even later generations of the brute creation since the advent of the atomic age, it would appear to be of some importance for us to remember that the phenomenon of increased intellectual powers in the human being may very well be accompanied by signs of enhanced intelligence in animals, and in the event of a patient showing marked signs of deviating from its accustomed way of life to be constantly on our guard against a hasty diagnosis of dementia arising from one cause or another, or of syndromes emanating from tumours or pressure in conjunction with the central nervous system.

In fact, the profession would be very well advised to consider its position *vis-à-vis* this denouement very carefully and be prepared, if necessary, to take time by the forelock for once. Able at the moment to recognise its master's crib, it would appear possible that in a few years the ox may be capable of asking itself if it is, in fact, the best and most modern feeding trough which his owner can afford in what may still be a time of full employment; and if it is not, to go further and attribute its own shortcomings in milk or beef production to a psychological block brought on by frustration or by some curious variation of the oedipus complex. The implications are vast: to-day, at an owner's request, or when we feel assured that a case is beyond the help of medicine or surgery, we clap a 45 to an animal's head with a clear conscience, quite sure that what we are doing is in the best interests of all concerned. Conscious of the developing or half-developed mind inside the cranial cavity shall we do so with as little compunction in 20 years time or will the whole conception of euthanasia have become by then something which can no longer be considered in conjunction with what may very well be a higher order of being? In such a case we should do well, even at this early stage, to reconcile ourselves to the idea of an ageing animal population and to devote an increasing amount of time and study to the problems and diseases of the old and to the alleviation of illness and disability occasioned by the gradual decay of the organism.

Always provided, of course, that prolonged and presumably increased exposure to radiation will not, as the years go by, have produced an atrophying and stultifying effect on the brain tissue and by advancing the process a stage further have driven both veterinary surgeon and his patient incorrigibly batty.

Yours faithfully,

R. H. A. MERLEN.

Royal Veterinary College,
Royal College Street,
London, N.W.1.

June 25th, 1956.

"Black Disease" (Infectious Necrotic Hepatitis) in a Heifer

Sir,—In their interesting paper under the above title, which appeared on April 21st, Messrs. T. G. G. Herbert and L. E. Hughes suggest that the case recorded by them may be the first report of "black disease" in a bovine animal. I should therefore like to point out that what is probably the first case was recorded by me in 1929 under the title "Infectious necrotic hepatitis (black disease), caused by *B. oedematiens* in a cow" (*Australian vet. J.*, **5**, 11). It was pointed out next year (Turner, A. W., 1930, *Bull. Coun. sci. industr. Res. Aust.*, No. 46, p. 13), that four other cases had been observed on the same property from which this case was derived.

Although black disease in sheep has now come under virtually complete control in the affected districts as a result of the use of vaccine, cases continue to occur in cows, for which a routine prophylactic vaccination programme has never been adopted. I have been informed by Mr. J. A. Berriman, B.V.SC., of Rochester, Victoria, that over a period of years he has observed many scores of cases, the diagnosis of many of which has been confirmed at the Veterinary Research Institute, Parkville; and I understand that a report on this is being prepared for publication.

Finally, it is worth pointing out that black disease has also been recorded in a horse in the State of Tasmania, Australia (Dumaresq, J. A., 1939, *Aust. vet. J.*, **15**, 53); in this instance, there were no signs of fluke infestation, and it was suggested that wandering strongylid larvae may have acted as the kataphylactic agents.

Yours faithfully,

A. W. TURNER.

Animal Health Research Laboratory,
Cr. Flemington Road and Park Street,
Parkville, N.2., Victoria.

June 18th, 1956.

Salop. Steele Farm, Steele Lane, Prees, Whitchurch (June 22).

Staffs. Park Ford Farm, Cheadle, Stoke-on-Trent (June 22).

Warwicks. Four Oaks Farm, Berkswell, Coventry (June 18).

Yorks. Alma Farm, Kirby Misperton, Malton (June 19).

Foot-and-Mouth Disease

Dorset. Coombe Farm, Little Cheney (June 24).

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Essex. Ebenezer, Western Road, Thundersley (June 20); Solby Wood Farm, Western Road, Thundersley (June 21).

Lancs. Farnworth Estate, No. 19, Wigan Lane, Duxbury, Chorley; Thompsons Farm, Tannersmith Lane, Mawdesley, Ormskirk (June 19); Buckholes Farm, Higher Wheelton, Chorley; Portland Farm, Higher Wheelton, Chorley (June 23).

Lincs. 7, Laceys Lane, Leverton, Boston; Sycamore Farm, Heckington, Sleaford; Dunholme, Lincoln; Fulsby Mill Farm, Tumby, Mareham-le-Fen, Boston; 71, Cameron Street, Heckington, Sleaford (June 18); Quappalle Farm, Sleaford Road, Frampton Fen, Boston; Boston Road, Kirton Holme, Boston (June 19); 61, Church Street, Heckington, Sleaford; The Grove Allotments, Osbournby, Sleaford; Church Cottage, Cammeringham; Stount Road, Faithville, Boston; Rear of 39, High Street, Heckington, Sleaford (June 20); Jenkin Lane, Leverton, Boston (June 21); Broadway, Leedsgate Road, Gipsy Bridge, Boston; Main Road, Old Leake, Boston (June 23).

Sussex. Woods Place, Maynards Green, Horam (June 22).

Yorks. Oakwood House, South Duffield; White Moor Grange, Osgodby, Selby (June 22).

Swine Fever

Ches. Swanley Hall Farm, Acton, Nantwich (June 19).

Dorset. Yarde Farm, Pimperne, Blandford Forum (June 22).

Essex. North End Place, Felstead, Dunmow (June 21).

Hants. Manor Farm, Rockbourne, Fordingbridge (June 22); Middleway, Andover Down, Andover (June 23).

Lancs. Fairwall Farm, Stacksteads, Bacup; Cockhall Farm, Thurnham, Galgate, Lancaster (June 21); Piggery attached to Tripe Works, Hollinwood Avenue, Chadderton, Oldham (June 22).

Salop. Middle Farm, Chetwynd, Acton, Newport (June 22).

Somerset. Midnell Farm, Winsham, Chard; Yallands Farm, Staplegrove, Taunton (June 21).

Staffs. 1, Greenwood Avenue, Chadsmoor, Cannock (June 21).

Surrey. Dents Farm, Lower Kingswood, Tadworth (June 21).

Worcs. Hill Farm, Woodcote Bromsgrove (June 20).

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the B.V.A.

The Veterinary Record

Sir,—I was interested in the reference to vitamin B_{12} in the letter from Major Hamilton Kirk in THE VETERINARY RECORD of April 7th last. I was recently informed of its use in race-horses by a client, and I felt it a reflection on myself and my profession that I had no information on the subject apart from that contained in trade advertisements. My client was injecting his own horses and was convinced that his success on the course was attributable to the injection; he remained convinced even when I pointed out that the dose he was using was that advised for puppies! I know that I am right in saying that he is wrong—but how much more strength to my arm if I could point to a clinical article or letter giving the opinion of some experienced horse practitioner in England. All I can recall of recent publications on vitamins is an article on the requirements of dogs which definitely comes into the category described by Major Kirk as " high brow."

I have recently had occasion to read up the subject of doping in race-horses and it supports Major Kirk's criticisms of THE RECORD that the only references to it that have so far been found for me by the Royal College Library are in an Australian and an American journal. The latter journal is remarkable for its newsy items and photographs. But one cannot blame a periodical for not publishing what it does not receive, and, sometimes, as with the article on " Veterinary Education in America," THE RECORD is most interesting. It cannot be that the Editorial committee rejects clinical material, and the lack of it, and of other general articles, can either mean that Major Kirk represents a minority of the profession, or that the inarticulate majority are rendered more so by the general " high brow " tone of their official organ.

Yours faithfully,

R. G. MARES.

31, Shirley Gardens,
Hornchurch,
Essex.

June 8th, 1956.

Prolonged Gestation

Sir,—May I record the following in THE VETERINARY RECORD?

An eight-year-old Friesian cow gave birth to a cross bred Hereford heifer calf after an 11-month gestation period. The calf was delivered alive by caesarean section (in the standing position) but died shortly afterwards. It weighed 160 lb.

Yours faithfully,

ERIC WILLIAMS.

Trevaughan,
St. Clears,
Carmarthen,
S. Wales.

June 16th, 1956.

Atomic Intelligence

Sir,—An article in the *Manchester Guardian* of June 21st seems inclined to attribute the apparent increase in brain power observed in young children to the influence of atomic radiation which to a greater or lesser degree has been prevalent in the atmosphere since 1945. Naturally enough the human element may have played some part in obscuring the issues involved; it is quite possible that some of the brilliant questions asked by the ten-year-olds may have been inspired by paternal pride since the briefing of little Charlie with a couple of conundrums to ask the gentleman at the interview is an obvious and effective method of vindicating family honour and erudition. Excluding this possibility, however, and assuming that radiation is capable of exerting a profound influence in the development and activity of brain tissue (which presumably is essentially the same throughout creation) it would seem that this fascinating field of research is one in which the veterinary surgeon can work in the closest collaboration with his medical colleagues, especially as the pates of the majority of our patients are almost constantly beneath the open sky and hence, presumably, are constantly subject to the influence of any rays that may happen to be about.

As sufficient time has elapsed for the appearance of a second or even later generations of the brute creation since the advent of the atomic age, it would appear to be of some importance for us to remember that the phenomenon of increased intellectual powers in the human being may very well be accompanied by signs of enhanced intelligence in animals, and in the event of a patient showing marked signs of deviating from its accustomed way of life to be constantly on our guard against a hasty diagnosis of dementia arising from one cause or another, or of syndromes emanating from tumours or pressure in conjunction with the central nervous system.

In fact, the profession would be very well advised to consider its position *vis-à-vis* this denouement very carefully and be prepared, if necessary, to take time by the forelock for once. Able at the moment to recognise its master's crib, it would appear possible that in a few years the ox may be capable of asking itself if it is, in fact, the best and most modern feeding trough which his owner can afford in what may still be a time of full employment; and if it is not, to go further and attribute its own shortcomings in milk or beef production to a psychological block brought on by frustration or by some curious variation of the oedipus complex. The implications are vast: to-day, at an owner's request, or when we feel assured that a case is beyond the help of medicine or surgery, we clap a 45 to an animal's head with a clear conscience, quite sure that what we are doing is in the best interests of all concerned. Conscious of the developing or half-developed mind inside the cranial cavity shall we do so with as little compunction in 20 years time or will the whole conception of euthanasia have become by then something which can no longer be considered in conjunction with what may very well be a higher order of being? In such a case we should do well, even at this early stage, to reconcile ourselves to the idea of an ageing animal population and to devote an increasing amount of time and study to the problems and diseases of the old and to the alleviation of illness and disability occasioned by the gradual decay of the organism.

Always provided, of course, that prolonged and presumably increased exposure to radiation will not, as the years go by, have produced an atrophying and stultifying effect on the brain tissue and by advancing the process a stage further have driven both veterinary surgeon and his patient incorrigibly batty.

Yours faithfully,

R. H. A. MERLEN.

Royal Veterinary College,
Royal College Street,
London, N.W.1.

June 25th, 1956.

"Black Disease" (Infectious Necrotic Hepatitis) in a Heifer

Sir,—In their interesting paper under the above title, which appeared on April 21st, Messrs. T. G. G. Herbert and L. E. Hughes suggest that the case recorded by them may be the first report of "black disease" in a bovine animal. I should therefore like to point out that what is probably the first case was recorded by me in 1929 under the title "Infectious necrotic hepatitis (black disease), caused by *B. oedematiens* in a cow" (*Australian vet. J.*, **5**, 11). It was pointed out next year (Turner, A. W., 1930, *Bull. Coun. sci. industr. Res. Aust.*, No. 46, p. 13), that four other cases had been observed on the same property from which this case was derived.

Although black disease in sheep has now come under virtually complete control in the affected districts as a result of the use of vaccine, cases continue to occur in cows, for which a routine prophylactic vaccination programme has never been adopted. I have been informed by Mr. J. A. Berriman, B.V.SC., of Rochester, Victoria, that over a period of years he has observed many scores of cases, the diagnosis of many of which has been confirmed at the Veterinary Research Institute, Parkville; and I understand that a report on this is being prepared for publication.

Finally, it is worth pointing out that black disease has also been recorded in a horse in the State of Tasmania, Australia (Dumaresq, J. A., 1939, *Aust. vet. J.*, **15**, 53); in this instance, there were no signs of fluke infestation, and it was suggested that wandering strongylid larvae may have acted as the kataphylactic agents.

Yours faithfully,

A. W. TURNER.

Animal Health Research Laboratory,
Cr. Flemington Road and Park Street,
Parkville, N.2., Victoria.

June 18th, 1956.

B.V.A. 74th Annual Congress at Royal Leamington Spa

September 16th to 22nd, 1956

Programme

(All meetings will be held in the Great Hall of the Town Hall unless otherwise stated)

SUNDAY, SEPTEMBER 16th

6.30 p.m.
Service at All Saints' Parish Church, Bath Street, Leamington, conducted by the Vicar—Rev. Canon R. C. Streatfield, M.A.

8.00 p.m.
"At Home" given by the Midland Counties and East Midlands Divisions, at the Regent Hotel, Leamington.

MONDAY, SEPTEMBER 17th

10.00 a.m.
Blessing: Rev. Canon Streatfield, M.A. Opening of Congress by His Grace The Duke of Devonshire, M.C. Civic Welcome by the Mayor of Royal Leamington Spa.

10.30 a.m.
Ladies' excursion: Visit to Cheltenham, including Broadway and the Slaughters.

10.45 a.m.
Opening of Veterinary Exhibition by the President, B.V.A.

12 to 1 p.m.
Films.

2.30 p.m.
Paper: "Review of Present Knowledge of Johne's Disease."
Author: Mr. T. M. Doyle, F.R.C.V.S., D.V.S.M.
Openers: Mr. J. B. White, M.R.C.V.S., and Mr. J. D. Rankin, M.R.C.V.S.
Chairman: Mr. A. L. F. Mullen, M.R.C.V.S., D.V.S.M.
Recording Secretary: Mr. D. C. Croft, B.V.SC., M.R.C.V.S.

8.30 p.m. to 1 a.m.
Civic Reception and Dance at the Town Hall, by kind invitation of the Mayor and Corporation of Royal Leamington Spa.

TUESDAY, SEPTEMBER 18th

9.30 a.m.
Paper: "Farm Health Problems: Where Does Britain Stand Today?"
Author: Mr. S. L. Hignett, B.SC., M.R.C.V.S.
Opener: Sir James Scott Watson C.B.E., M.C.
Chairman: Mr. E. R. Callender, O.B.E., M.R.C.V.S.
Recording Secretary: Miss W. M. Brancker, M.R.C.V.S.

10.30 a.m.
Ladies' Guild Annual General Meeting.

2.00 p.m.
Demonstrations by close-circuit Television at the Moreton Morrell Institute, Nr. Leamington (by kind permission of the Principal).

6.00 p.m.
Alumnus Dinners.

8.30 p.m.
Ladies' Guild Dance at the Spa Ballroom, Leamington.

WEDNESDAY, SEPTEMBER 19th

9.30 a.m.
Paper: "Present-day Toxicity Problems: A Review."
Author: Mr. J. L. McGirr, B.SC., M.R.C.V.S.
Openers: Mr. A. Steele-Bodger, M.A., B.SC., M.R.C.V.S., and Mr. N. M. Black, M.R.C.V.S.
Chairman: Mr. W. L. Dwerryhouse, M.R.C.V.S., D.V.S.M.
Recording Secretary: Mr. T. C. Denholm, M.R.C.V.S.

10.30 a.m.
Ladies' excursion: Visit to Kenilworth, Guys Cliffe and Stoneleigh.

11.30 a.m.
Paper: In the Small Hall—"Common Disease of Cage Birds and other less usual Pets."
Author: Mr. O. G. Jones, M.R.C.V.S.
Opener: Mr. I. F. Keymer, M.R.C.V.S.
Chairman: Mr. S. Jennings, M.R.C.V.S.
Recording Secretary: Mr. G. V. Laugier, M.R.C.V.S.

12.30 p.m.
Last Meeting of Council 1955/56.

2.30 p.m.
Congress Photograph.

3.00 p.m.
Annual General Meeting, with Presidential Address.

7.30 for 8.00 p.m.
Annual Banquet at the Leofric Hotel, Coventry.

THURSDAY, SEPTEMBER 20th

9.30 a.m.
Paper: "The Anatomy of Disc Protrusion in the Dog."
Author: Dr. A. S. King, B.SC., M.R.C.V.S.
Openers: Mr. S. W. Douglas, M.A., M.R.C.V.S., and Dr. G. B. Brook, F.R.C.V.S., F.R.S.E.
Chairman: Mr. J. S. Steward, F.R.C.V.S., D.V.S.M.
Recording Secretary: Mr. W. H. Carr, B.V.SC., M.R.C.V.S.

9.30 a.m.
Paper: In the Small Hall—"Artificial Insemination in Pigs."
Joint Authors: Mr. C. Polge, B.SC., Mr. L. E. A. Rowson, O.B.E., M.R.C.V.S.
Openers: Mr. D. H. L. Madden, M.R.C.V.S., and Mr. A. F. Holt, B.SC., M.R.C.V.S.
Chairman: Mr. W. P. Stokes, M.R.C.V.S.
Recording Secretary: Mr. M. Steele-Bodger, M.R.C.V.S.

11.30 a.m.
Paper: In the Small Hall—"Foot-rot in Sheep."
Author: Professor W. I. B. Beveridge, D.V.SC. (SYD.), M.A.
Opener: Miss A. I. Littlejohn, B.V.SC., M.R.C.V.S.
Chairman: Mr. J. G. Murray, M.R.C.V.S. DIP. BACT.,
Recording Secretary: Mr. H. E. Roberts, B.SC., M.R.C.V.S.

2 to 4 p.m.
Special Film Programme.
Golf, Tennis, Bowls, etc.

3.00 p.m.
Mannequin Parade at the Lord Leycester Hotel, Warwick (for the ladies).

7.30 p.m.
Free, or visit to Shakespeare Memorial Theatre to see "LOVE'S LABOUR'S LOST" (*Application for tickets should be made immediately to B.V.A. Headquarters.*)
(For those attending this performance arrangements are being made for dinner to be served at 6.30 p.m. at the Red Horse Hotel, Stratford on Avon.)

FRIDAY, SEPTEMBER 21st

9.30 a.m.
Paper: "Animal Diseases from the Point of View of Human Medicine."
Joint Authors: Dr. P. G. Arblaster, M.R.C.P., Dr. A. P. Prior, B.S.
Openers: Dr. N. S. Barron, B.SC., M.R.C.V.S., and Mr. H. T. Matthews, M.A., B.V.SC., F.R.C.V.S., D.V.H.
Chairman: Mr. E. R. Corrigall, M.R.C.V.S., D.V.S.M.
Recording Secretary: Mr. A. F. Ritchie, M.R.C.V.S.

11.30 a.m.
Paper: In the Small Hall—"Examination of the Eye with Special Reference to the Horse and Dog."
Author: Professor C. Formston, F.R.C.V.S.
Opener: Mr. S. F. J. Hodgman, M.R.C.V.S.
Chairman: Major F. Chambers, O.B.E., F.R.C.V.S.
Recording Secretary: Mr. G. Eaton, F.R.C.V.S.

2.30 p.m.
Ladies' excursion: Visit to Compton Wynyates and Ettington Park.

2.30 p.m.
Paper: "Poultry Breeding for Increased Production with Special Reference to Health."
Author: Mr. J. O. L. King, M.V.SC., B.SC., M.R.C.V.S.
Openers: Mr. G. G. Belfield (Sterling Poultry Products, Ltd., Salisbury) and Miss E. E. Kidd (President, Chick Producers' Association, London).
Chairman: Mr. E. G. Morris, M.R.C.V.S.
Recording Secretary: Mr. A. H. Hogg, M.R.C.V.S.

2.30 p.m.
Films

8.30 p.m. to 1 a.m.
President's Reception and Dance at Chesford Grange.

SATURDAY, SEPTEMBER 22nd

10.00 a.m.
Closing Meeting of Congress.
First Meeting of Council 1956/57.